TEKTRONIX

TDS7404

The Tektronix TDS7404 is a high-performance 4 GHz, 4-channel Digital Phosphor Oscilloscope (DPO) designed for advanced digital design, jitter analysis, and serial data validation. It combines a real-time sample rate of 20 GS/s with up to 400,000 wfms/s capture rate, an open Microsoft Windows operating system, and TekConnect connectivity for high signal fidelity.

SPECIFICATIONS

Vertical System

Input Channels	4
Analog Bandwidth (-3 dB)	4 GHz
Calculated Rise Time (10% to 90%)	100 ps
Calculated Rise Time (20% to 80%)	70 ps
Input Coupling	DC, GND
Input Sensitivity Range	2 mV/div to 1 V/div
Vertical Resolution	8-bit (>11-bit with averaging)
Position Range	±5 divisions

Horizontal System

Real-Time Sample Rate (1 Channel)	20 GS/s
Real-Time Sample Rate (2 Channels)	10 GS/s
Real-Time Sample Rate (3 or 4 Channels)	5 GS/s
Maximum Record Length (with Option 4M)	32 MS (1 Ch), 16 MS (2 Ch), 8 MS (4 Ch)

Trigger System

Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Rej, LF Rej, Noise Rej
Trigger Holdoff Range	250 ns to 12 s
Edge Triggering	Positive or negative slope on any channel or front panel auxiliary input
Runt Triggering	Trigger on a pulse that crosses one threshold but fails to cross a second before crossing the first again
Timeout Triggering	1 ns to 1 s
Pattern/State Triggering	Trigger when pattern goes false or true, or is qualified by a clock edge (up to 4 inputs)
Setup/Hold Triggering	Trigger on violations of both setup time and hold time between clock and data
Transition Triggering	1 ns to 1 s
Window Triggering	Trigger on an event that enters or exits a window defined by two thresholds

Acquisition Modes

Sample Mode	Acquires and displays sampled values
Envelope Mode	Acquires and displays minimum and maximum values over multiple acquisitions
Average Mode	Averages waveform data from 2 to 10,000 acquisitions
Waveform Capture Rate	>400,000 wfms/s (FastAcq mode)
FastAcq Mode	Reduces oscilloscope dead-time to maximize probability of capturing rare events
FastFrame Segmented Memory	Acquires multiple frames into a single record
Waveform Database Mode	Accumulates a multi-dimensional database of amplitude, time, and hits

Waveform Measurements and Analysis

Automatic Measurements	53 automatic measurements
Measurement Statistics	Mean, Minimum, Maximum, Standard Deviation, Population
Waveform Histograms	Vertical or horizontal histograms with statistics
Math Functions	Add, Subtract, Multiply, Divide, Integrate, Differentiate, FFT
Advanced Math & Equations	Define algebraic expressions, including filters and variables
FFT Window Types	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2, TekExponential

Computer System & Storage

Operating System	Microsoft Windows
Internal Storage Capacity	≥20 GB hard disk drive
Removable Storage Drives	3.5 in. 1.44 MB floppy drive; CD-ROM drive

Connectivity & Interfaces

Analog Input Connectors	TekConnect interface (4 channels)
GPIB Interface	IEEE 488.2 fully programmable
LAN Port	RJ-45, 10/100 Base-T
VGA Output Port	DB-15 female connector for external display

Connectivity

Probe Interface	TekConnect
PS/2 Ports	2 PS/2 ports (mouse and keyboard)
Serial Port	1 DB-9 COM1 port
Parallel Port	1 DB-25 parallel port (EPP/ECP)
Audio Ports	3.5 mm Line-in, Line-out, and Microphone jacks

Power

Mains Input Voltage	100 to 240 V AC ±10%
Mains Input Frequency	47 to 63 Hz (100 to 240 V), 360 to 440 Hz (100 to 120 V)

Triggering

Auxiliary Trigger Input	TekConnect interface

Compliance & Safety

EMC Compliance	89/336/EEC, EN 61326-1, AS/NZS 2064
Safety Certifications	UL 3111-1, CSA 1010.1, EN 61010-1

Storage

Floppy Drive	3.5 in. 1.44 MB floppy disk drive

Triggering Options

Clock Recovery Frequency Range	1.5 Mbaud to 3.125 Gbaud (with Option SM or ST)
Serial Pattern Triggering Length	64-bit pattern (with Option ST)
Comm Triggering Standards	AMI, HDB3, BnZS, CMI, MLT3, and NRZ coded signals (with Option SM)

TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

High-speed digital design, jitter and timing analysis, compliance testing, and serial data validation